149. Major Issues in Business Process Management: A Vendor Perspective

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Abstract
Business Process Management (BPM) is widely seen as the top priority in organisations wanting to survive the current competitive markets. However, there appears to be a gap on what organizations want from their BPM deployments, with the actual results in such projects. It would be beneficial to study the different views on BPM issues across different stakeholders to better comprehend this gap. This paper reports on empirical evidence on the issues that organizations face in the adoption of BPM technologies and their efforts to manage business processes, from a BPM vendor perspective.

Introduction
BPM is a structured method of understanding, documenting, modelling, analysing, simulating, executing and continuously changing end-to-end business processes and all relevant resources in relation to their ability to add value to the business. It is widely acknowledged that process enforcement technologies hold the potential to provide the so-called "missing-middle" that can assist in overcoming the notorious business-IT divide (Davenport 1993). It is not surprising then that the BPM software market is one of the fastest growing segments within infrastructure software. The market was valued at just over $1 billion in 2005 and is expected to more than triple by 2012 (WinterGreen Research 2006).

While the market is growing, anecdotal evidence suggests that organizations are experiencing difficulties with their BPM initiatives. Indeed the few previous empirical studies in this area suggest that many are still in the very early stages of Business Process Management, and are experiencing fundamental problems such as obtaining top management support, creating BPM buy-in, and in general justifying the cost of the BPM software investments (Indulska *et al.* 2006; Bandara *et al.* 2007). BPM solutions are generally viewed as costly to license, time-consuming to implement and difficult to assess in terms of payback (Marshall 2007). Meanwhile, technologies used to support process initiatives are evolving rapidly and new vendors seem to be populating the BPM market (BPTrends 2006) offering a wider variety of products to what seems to be an increasingly confused market.

The increasing popularity and investment in BPM solutions and the fast increasing numbers of solution providers motivate us to identify the major issues that organizations face when deploying BPM. The findings reported in this paper are specifically identified from the BPM vendor community – the community of organizations who offer BPM solutions for sale. Such BPM vendors were approached, and their perspectives on BPM adoption-related issues are summarized in the latter part of this paper. The basic premise of our research is that the vendors provide a unique perspective that encompasses organizational, technological as well

as conceptual challenges. Accordingly, the research question driving this study is the identification of issues from vendors' experiences with their clients: *"What are the major issues in BPM adoption and deployment?"* We address this question through a comprehensive qualitative study involving in-depth interviews with global BPM vendors (service and technology).

Research Method

Eight global BPM vendors were interviewed over a six month period (March 2006 to September 2006). Interview is a dominant source of information collection technique in qualitative research (Opdenakker 2006), and they can be open ended, semi-structured, structured or survey type. A semi-structured interview approach was used, which enabled the interviewees to think about topics, themes and core content in a new way and to reflect upon and link their experiences and perceptions (Kramp 2004), as well as to talk about new ideas and perspectives. Each interview lasted approximately 45 minutes to 1 hour. The participating vendors were identified through Gartner's Magic Quadrant reports (Gartner 2006). Gartner's Magic Quadrant reports are one of the most referenced resources in the IT industry and have a reputable influencing capacity on business decisions (i.e. IT product purchasing decisions). The report provides graphical representation of their independent analysis of a specific marketplace and how certain vendors score against set. Thus, it is used as a reference point for us to identify prominent vendors for our study. A list of target BPM vendors was developed and the vendors were individually contacted. The details of vendors are not revealed in this paper due to confidentiality and ethical reasons. Key characteristics of the participating vendors are summarized in Table 1. A face-to-face interview or a telephone interview was then set up to suit the feasibility of the project. Long established evidence (e.g. Rogers 1976) denotes that telephone interviews are just as effective as face to face interviews and we have observed no limitations in the data collected in this manner in this particular project.

Table 1: Participant Vendor and Interview Characteristics.

	Head Quarters	*Type of Solution Provider*	Interview Mode
1	USA	BPM Software & Systems Provider	Face-to-face
2	USA	BPM Software & Systems Provider	Phone
3	USA	BPM Software & Systems Provider	Phone
4	Europe	BPM Software & Systems Provider	Face-to-face
5	Europe	BPM Software & Systems Provider	Face-to-face
6	USA	BPM Trainer/ Consultant	Face-to-face
7	Australia	BPM Software & Systems Provider	Phone
8	USA	BPM Trainer/ Consultant	Face-to-face

The semi-structured interview protocols were designed and pilot tested to elicit free flowing information from the target vendors. Two researchers took part in the data collection process where a protocol on the overall interview conduct was followed. The first three questions were designed to 'set the scene'. Question 1 was posed to clarify the vendor's perspective on what BPM is and to further identify their view on what BPM can do within organizational contexts. Questions 2 and 3 (about offered BPM products and the customer base) were intended to anchor the vendor into of the area of their products and solutions, Questions 4 and 5 were the main parts of the interview, where major issues and potential recommendations in terms of the generic BPM methodology and specific BPM technology were elicited.

Data Analysis

As each interview was completed, the main findings were summarized. All interviews were transcribed and analyzed using the qualitative data analysis tool NVivo 2.0. The interviews were coded using a bottom up approach, where, individual folders (nodes) within the NVivo tool were created to capture details of each emerging issue and any related recommendation(s)

The detailed coding was conducted by two of the researchers. One first coded each of the interviews and created an initial node structure. The other re-coded the interviews against this created node structure. Only a few, very minor discrepancies existed and these were discussed and resolved by recoding as agreed to a common consensus. This resulted in a set of major BPM issues as defined by BPM vendors; these main issues are reported in detail in the next section of this paper.

Research Findings

The findings are grouped into three categories namely strategic level issues, tactical level issues, and operational/technical level issues (as shown in Table 2), following recent prior publications on BPM issues (Indulska *et al.* 2006; Bandara *et al.* 2007). We adopted this approach here, in order to specify the context of the identified issues, as well as to better structure the discussion. From the BPM perspective, the strategic level, which is at the top level of categorisation, relates to top management support, business and IT alignment, process organisation and governance issues. The tactical level encompasses challenges in efforts such as process modelling, process performance measurement and BPM methodologies. The operational level relates to technological issues in BPM adoption such as technology capability, SOA (Service Oriented Architectures) maturity in the technology landscape, use of XML standards etc. Additionally, and specifically for the vendor community, there are two classes of issues and challenges. There is one class of issues and challenges that arises due to the problems of the technology buyers, i.e. organizations implementing the particular solutions provided by the vendor. Then, there is a second class, which arises due to technological limitations. Clearly the second class was not actively promoted by any vendor, but was occasionally evident from the script. The following section describes these issues in detail. While direct quotes from the vendors were maintained for each of these categories, They are not presented here due to space constraints.

Issues at the Strategic Level

Lack of understanding on process orientation (B)

Misconceptions on some of the fundamental principles of BPM were identified as a major roadblock in promoting (selling) the technology. Even in implementation initiatives where organizations were already undertaking BPM, vendors had difficulties in helping them achieve best value from their investments. Lack of awareness and understanding on process orientation was also associated with lack of education or systematic training regimes that (should) ensue from such technology uptakes. Vendors showed much concern in this regard as it eventually undermines the benefits of the products and solutions. As a positive outcome of BPM initiatives, it was noted that the development of understanding of process orientation, and the discovery of the whole process, and particularly the resultant explicit documentation was a significant outcome in. To a lesser degree, issues on terminology overload were also raised. This is consistent with the observation made on bringing BPM to the mass market – that due to the highly fragmented market with few standards across disciplines, definitional confusion occurs and feeds on this fragmented market which further hinders standard creation

and kept prices high for BPM solution (Baeyens and Fricke 2006). There is also neither a widespread agreement on the definitions of BPM (and other terms such as workflow or orchestration) nor an agreement on where each is best suited. Particularly the association between workflow and BPM, and preconceived notions of one or the other and how this contributes to fuzzy understanding.

Lack of common mindset (B)
The lack of a common mindset is a lead up to the lack of understanding in process. It is a significant contributor to difficulties faced by vendor when promoting BPM technology to organizations at strategic level. More often, customers were said to have a preconceived understanding, and new initiatives were somehow fitted into the existing mind set. A strong recommendation to overcome this problem was to promote a structured methodology.

Customer resistance (B)
Customer resistance was identified from two different angles. Firstly, vendors indicated that organizations that had successful BPM projects should make their success more widely known, both within and outside the BPM industry. Secondly, issues were raised regarding impact on organizational work practice and underestimation of change management challenges.

Lack of governance (B)
Lack of governance is a frequently quoted issue by vendors. "*Corporate governance is the system by which companies are directed and managed. It influences how the objectives of the company are set and achieved, how risk is monitored and assessed, and how performance is optimized*" (ASX Corporate Governance Council 2003).
Vendors indicated that lack of governance during the deployment and subsequent change management is detrimental to the BPM project in general. More specifically, points were raised on the appropriate delegation and appointment structures for process champions/owners.

Issues at the Tactical Level

Lack of flow between strategic and operational directives (B)
A gap was identified between the strategic objectives and operational practices, which was undermining BPM benefits. This lack of flow within the organizational hierarchy can result in inappropriately positioned BPM investment. Certain BPM solutions (design tools) also provide support for the identification of strategic processes. But getting strategic buy-in to utilize the tools still remains a challenge according to the vendors. On the other hand, vendors also warn against the pitfalls of over analysis. In addition, vendors emphasise the need for effective pipelines between the process definitional and execution phases. Solutions where there is a disconnect between the two will only provide limited benefits as strategic objectives determined in process design may not be effectively controlled and monitored through a process enforcement technology
.
Lack of standard methodology (T)
Lack of standard methodology within organizational contexts for the uptake of BPM as a management approach and subsequently within technology infrastructures, results in substantial 'pain points' and unnecessary 're-invention-of-the-wheel' situations for vendors.

Different vendors put forth different methodologies which they have devised through their particular experience and R&D.

The lack of standard guidelines or common industry practice results in repeated re-inventions. The move towards such a standard methodology is a significant challenge due to the diversity of contexts that surround business process design and enactment. Thus, although a one size fits all BPM methodology may never emerge as an industry standard, vendors still emphasise the need for some consolidation in this endeavour.

Lack of lifecycle management (B)
One of the main driving forces for BPM has been process improvement (Gartner 2007). Recent market analysis also indicates that improvement of productivity will be the main driver of the BPM market in the coming years (WinterGreen Research 2006). Thus, any BPM undertaking is a continuous and incremental process that needs to be governed by systematic lifecycle management. Lack of such practices was identified by vendors as a key tactical issue. Lack of flow between strategic and operational aspects of the organization is linked to this point. Particularly in dynamic environments, the propagation of changing business process models into the executable artefacts of the organization's technology infrastructure is a significant challenge, and often the source of this disconnect.

Difficulties in identification of processes (B)
Enterprise software vendors such as SAP, Oracle, and PeopleSoft are evolving rapidly, promising to improve flexibility, implementation and support for the extended enterprise through modules for customer relationship management, advanced planning systems, supply chain management, and collaborative commerce in a Web-based environment (Dalal *et al.* 2004). However, a common cause of difficulty when implementing the software involves management's understanding of its own business process (Keller and Detering 1996). Business processes, including order-fulfilment, procurement, and product development, hold the key to the financial success of an organisation. BPM software or system is theoretically capable of supporting and implementing business processes because it encapsulates best business practices and trial and tested approaches, hence the ideal vehicle for delivering the benefits of an integrated cross-functional approach. However, "as many companies get ready to implement standard software, they encounter the problem of how to simplify and model the enormous complexity of their business processes" (Keller and Detering 1996).

Vendors agree that *"most businesses can't articulate their processes in a structured way."* The reasons behind them are typically associated with legacy systems and incrementally evolving functions. The result of such scenarios is difficulty in identifying firstly what the key processes are (see also lack of flow between strategic and operational directives) and secondly articulation of end-to-end processes. The BPM definitional phase is identified by vendors as highly challenging, but critical to subsequent phases. This initial investment can prove to be a bottleneck, and particularly technology vendors (as opposed to consultants) struggle with providing support for this activity

Lack of standard language (T)
Given the situation where there are a variety of products commercially available to support Business Process Modeling for the past decade, the selection of the product in BPM projects and the appropriate selection criteria have been extensively studied (van der Aalst *et al.*

2003). However, there seems to be a lack of well-defined semantics for process-oriented language. This needs to be addressed, especially during product selection. Process modeling techniques are mostly general-purpose by design. As a result, they lack explicit semantics for enterprise-oriented concepts like cost and time (Dalal *et al.* 2004). As remarked by Kiepuszewski *et al.* (2003), the lack of formal semantics has resulted in different interpretations by vendors of even the basic control of flow constructs. We see this situation confirmed in practice.

Lack of agreement on a standard modelling language is a major factor contributing to the success or failure of the BPM definitional phase. However, there is general agreement that a universal language for complex and context dependent concepts found in business processes is extremely difficult. Industry initiatives for standardization such as BPMN [www.bpmn.org], BPEL [www-128.ibm.com/developerworks/library/specification/ws-bpel/] were mentioned, but customer confidence in the dynamically changing space was still low, subsequently vendor uptake is also slow. Currently vendors are struggling with one too many standards emerging from various sources, many of them are vendor consortiums themselves. Both the interleaved issues of expressibility as well as notation are being debated.

Issues at the Operational Level

Difficulties in integration (T)

This is the case of predicting the unknown. Vendors are not aware of their customer organization's technology infrastructure, but benefits of BPM are closely connected with process enforcement through controlling and monitoring enterprise applications and service dependencies.

Difficulties in use of product functionality (B)

Several vendors also identify incorrect usage as a deterrent in best use of their solutions. This was attributed to lack of training, preconceptions on product functionality or misfit of business requirements.

Contributions, Limitations and future work

This paper provides a targeted discussion of the frequently mentioned issues and challenges related to Business Process Management adoption in present organizations, as perceived by BPM vendors. In order to identify the main issues, a research approach was used, employing in-depth interviews with eight vendor participants, identified through a well-defined selection process. In particular, the study has found a number of more frequently noted issues, such as: lack of understanding on process orientation, lack of common mindset, lack of flow between strategic and operation directives, lack of lifecycle management, difficulties in process identification, and incorrect use of product functionality.

These findings are expected to be beneficial to both the BPM research and practicing communities. BPM researchers may benefit in terms of guidance for positioning their current research and targeting future research on BPM topics identified by industry as areas that need attention. The expected contribution to industry is via creating an empirically based awareness on the common BPM issues in the Australian BPM market.

The study is not without its limitations. The data collected at this stage of the study was limited to a selected group of BPM vendors- identified through Gartner's Magic quadrant report (Gartner 2006). While inherent weaknesses of interviews (which were used as the data

collection approach) were mitigated as much as possible with a coherent interview protocol, the process is relatively subjective in nature and research bias may have occurred during data collection, in particular when identifying target interviewees and during the facilitation and probing of the actual interviews.

While this paper reported on issues pertaining to BPM vendors, the identification of issues as observed by other stakeholders such as BPM experts, and BPM users will add further value to this study. Such a method of triangulation will enable a rich cross-perspective analysis of BPM issues across different crucial stakeholders of BPM, leading to a better understanding of overall issues in BPM and, accordingly, related critical research directions.

References

Van der Aalst, W.M.P., ter Hofstede, A.H.M., Weske, M. (2003) "Business Process Management: A Survey" in proceedings of *the International conference of Business Process Management*, Eindhoven, The Netherlands, June 26-27.

ASX Corporate Governance Council (2003) "*Principles of good corporate governance and best practice recommendation"*. Last accessed on 29th July, 2006, at:
http://www.shareholder.com/visitors/dynamicdoc/document.cfm?documentid=364&companyid=ASX

Bandara, W., Gable, G. G., & Rosemann, M. (2005). "Factors and measures of business process modeling: Model building through a multiple case study*"*. *European Journal of Information Systems*, 14, 347-360.

Bandara, W., Indulska, M., Sadiq, S. and Chong, S. (2007) "Major issues in Business Process Management: an Expert Perspective", Proceedings of *European Conference on Information Systems* (ECIS), forthcoming.

Baeyens, T. and Fricke, P. (2006) "Bringing BPM to the Mass Market", March/April, Thomas Publication, Inc. Last accessed 3rd of March, 2007. URL: http://www.bijonline.com/index.cfm?section=article&aid=246.

BPTrends (2006) "BEA Acquires Fuego", 1st March, 2006. Last accessed: 28th of February, 2007. URL: http://www.bpmg.org/modules.php?op=modload&name=News&file=article&sid=1547&

Dalal, N., Kamath, M., Kolarik J., and Sivaraman, E. (2004) "Toward an Integrated Framework For Modeling Enterprise Processes," *Communications of the ACM*, 47 (3), March, pp83-87.

Davenport, T., (1993) "*Process Innovation: Reengineering Work through Information Technology*", Harvard Business School press.

Gartner (2006) Magic Quadrant for Business Process Management Suites, Gartner, June.

Gartner (2007) Creating Enterprise Leverage: The 2007 CIO Agenda, Gartner, January.

Indulska, M., Chong, S., Bandara, W, Sadiq, S. and Rosemann, M. (2006) "Major Issues in Business Process Management: An Australian Perspective", In: Proceedings of the *17th Australasian Conference on Information Systems*. Adelaide, Australia, December 6-8.

Keller, G. and Detering, S. (1996) "Process-oriented modeling and analysis of business processes using the R/3 reference model", in Modeling and Methodologies for Enterprise Integration, P. Bernus and L. Nemes, Eds. Chapman & Hall, London, pp. 69—87

B. Kiepuszewski. (2003) "*Expressiveness and Suitability of Languages for Control Flow Modelling in Workflows"*. PhD thesis, Queensland University of Technology, Brisbane, Australia, 2003.

Kramp, M.K. (2004) "Exploring life and experience through narrative inquiry". In Kathleen de Marrais & Stephen D. Lapan (Eds.), *Foundations for research: Methods in education and the social sciences* (pp.103-121). Mahwah, NJ: Erlbaum.

Marshall, J. (2007) "When will a BPM 'Tipping Point' Accelerate its Use?, Financial Executive, Morristown: Jan/Feb, Vol.23, Iss.1: p. 42 – 44.

Opdenakker, R. (2006) "Advantages and Disadvantages of Four Interview Techniques in Qualitative Research". Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 7(4), Art. 11. August. Last accessed: 3rd of March, 2007. URL: http://www.qualitativeresearch.net/fqs-texte/4-06/06-4-11-e.htm

Spanyi, A. (2006) "Business Process Management: Never Rest". Intelligent Enterprise Magazine, 1st May, Last accessed: 28th of February, 2007. URL:
http://www.intelligententerprise.com/showArticle.jhtml?articleID=184430200

Rogers, F., T., (1976) "Interviews by Telephone and in Person: Quality of Responses and Field performance". *The public Opinion Quarterly*, Vol. 40, No. 1. (Spring), p.51-65.

WinterGreen Research (2006) "*Business Process Management (BPM) - Market Opportunities, Strategies, and Forecasts*", 2006 to 2012. Report # SH29821474.

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